



SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION

1. CERTIFICATE/QUALITY ASSURANCE PROGRAM (QAP) HOLDER: EnergySolutions 2105 S. Bascom Avenue, Suite 160 Campbell, CA 95008		2. NRC/REGIONAL OFFICE Headquarters U. S. Nuclear Regulatory Commission Mail Stop 3WFN 14C-28 Washington, DC 20555-0001	
REPORT NUMBER(S) 71-0935/2014-202			
3. CERTIFICATE/QAP DOCKET NUMBER(S) 71-0935	4. INSPECTION LOCATION Ogden, UT	5. DATE(S) OF INSPECTION December 3-4, 2014	

CERTIFICATE/QUALITY ASSURANCE PROGRAM HOLDER:

The inspection was an examination of the activities conducted under your QAP as they relate to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your QAP Approval and/or Certificate(s) of Compliance. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

- ☒ 1. Based on the inspection findings, no violations were identified.
- ☐ 2. Previous violation(s) closed.
- ☐ 3. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, to exercise discretion, were satisfied.

_____ Non-cited violation(s) was/were discussed involving the following requirement(s) and Corrective Actions(s):



- ☐ 4. During this inspection, certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited in accordance with NRC Enforcement Policy. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.
(Violations and Corrective Actions)

Statement of Corrective Actions

I hereby state that, within 30 days, the actions described by me to the Inspector will be taken to correct the violations identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested.

TITLE	PRINTED NAME	SIGNATURE	DATE
CERTIFICATE/QAP REPRESENTATIVE	Richard Byars		12/4/14
NRC INSPECTOR	Jeremy Tapp		12/11/14
BRANCH CHIEF	Patricia Silva		1/7/15

INSPECTOR NOTES COVER SHEET

Licensee/Certificate Holder (name and address)	<p>EnergySolutions 2105 S. Bascom Avenue, Suite 160 Campbell, CA 95008</p> <p>EnergySolutions Suite 100 Center Point II 100 Center Point Circle Columbia, SC 29210</p>
Licensee/Certificate Holder contact and phone number	<p>Steve Sisley, 408-558-3509 Richard Byars, 803-758-1808</p>
Docket No.	71-0935
Inspection Report No.	71-0935/2014-202
Inspection Dates(s)	December 3-4, 2014
Inspection Location(s)	Petersen Inc., Ogden, UT
Inspectors	<p>Jeremy Tapp, Team Leader, Safety Inspector Rob Temps, Senior Safety Inspector</p>
Summary of Findings and Actions	<p>Petersen, Inc. (Petersen) is under contract with EnergySolutions (ES) to fabricate the 3-60B transportation package at the Petersen fabrication facility located in Ogden, UT. The inspection was conducted to determine if fabrication activities were performed in accordance with the requirements of 10 CFR Part 71 and 21, the applicable Certificate of Compliance (CoC No. 71-9321), Safety Analysis Report, and ES' Nuclear Regulatory Commission (NRC)-approved Quality Assurance Program (QAP).</p> <p>The inspection consisted of an examination of selected fabrication and test activities, procedures and representative records, and interviews with personnel. Overall, the team assessed that the fabrication activities Petersen performed and the implementation of the QAP were adequate. No violations of significance were identified.</p>
Lead Inspector Signature/Date	<p> 1/6/14 Jeremy Tapp</p>
Inspector Notes Approval Section Chief Signature/Date	<p> 1/7/15 Patricia Silva</p>

Inspection Background

Petersen, Inc. (Petersen) is under contract with EnergySolutions (ES) to fabricate one 3-60B transportation package, which is also the first 3-60B package to be fabricated. ES received design approval for this package from the NRC in 2010. Since that time, no 3-60B packages have been built and ES has submitted an amendment request to the NRC for the package design, which is currently under review by NRC staff. As a result, this first 3-60B package is being fabricated at risk until the NRC approves the design change.

In addition, this is the first time ES has had equipment fabricated at Petersen. Oversight of and responsibility for the project by ES is out of both the quality assurance (QA) group in the Columbia, SC office, and the licensing and fabrication groups in the Campbell, CA office.

Inspection Purpose

The purpose of the inspection was to assess ES' and Petersen's 3-60B package fabrication and test activities to determine if they were being performed in accordance with the requirements of 10 CFR Parts 71 and 21, the applicable CoC (No. 71-9321), Safety Analysis Report, and ES' NRC-approved QA program. Specific areas that were focused on during the inspection were fabrication and test activities and controls, nonconformance controls, training, procurement, and audits.

1.0 Management Controls

Nonconformance Controls

The team reviewed Petersen's nonconformance program to assess the effectiveness of controls established for the processing of nonconforming materials, parts, or components. The team reviewed the Petersen, Inc. Quality Control Manual, Section 15, "Control of Nonconforming Items," and its corresponding implementing procedure PI-SOP-15-01, "Nonconforming Material Procedure," Revision 18, dated 07/22/14. The team assessed that the procedures provided adequate guidance for the processing of nonconformances identified during receipt inspection and in process such as during fabrication, machining, inspection or testing. Nonconforming conditions are documented in a Nonconformance Report (NCR) that is attached to the nonconforming item(s) with yellow tape. Affected items are segregated when physically possible. The NCR is then evaluated and dispositioned as scrap, repair, rework, or use-as-is. The team noted appropriate controls in PI-SOP-15-01 for the "conditional release" of materials for continued processing to a predetermined point while the NCR is dispositioned. The team noted that NCRs are screened for reportability under 10 CFR 21 and that PI-SOP-15-02 provides specific instructions should an issue require such reportability.

The team reviewed four (4) NCRs issued since the initiation of fabrication of the 3-60B packaging earlier in the year and processed in accordance with PI-SOP-15-01. The team assessed that the NCRs had been appropriately dispositioned. No concerns were identified by the team in the processing of NCRs by Petersen.

2.0 Fabrication Controls

Procurement

The team obtained a list of Quality Level (QL) 1 components utilized in the 3-60B packaging from ES. Under ES's graded approach to quality, QL 1 is equivalent to Important to Safety (ITS) Category A (Cat A). The team selected four components from the list and reviewed the associated Petersen procurement documents for the items. Three of the four items were procured as commercial grade items and then dedicated using Petersen's commercial grade dedication process to QL 1/Cat A. Petersen's procedure for commercial grade dedication (CGD), PI-SOP-07-09, "Commercial Grade Dedication of Materials Using EPRI Guidelines," Revision 2, dated 01/07/14, was reviewed to verify that Petersen was following this process for CGD. The procedure had been reviewed and approved by ES for CGD of materials by Petersen. In lieu of a formal dedication plan, by procedure, ES as the design authority specifies the critical characteristics of the material to be procured (e.g. A240-Type 304L steel plate) and Petersen then specifies traceability and testing requirements of the procured material to the associated standard through the purchase order. Petersen requires that Certified Material Test Reports (CMTRs) originated from the material manufacturer be provided and also requires that test samples of the procured material be sent to Petersen (or a Petersen approved laboratory) for independent material specification verification. Petersen purchase orders require review and approval by ES and the team verified that this had occurred for the four purchase orders reviewed.

The team reviewed procedure PI-SOP-07-03, "Procedure for Preparation of Approved Supplier List," Revision 11, dated 09/04/13, and determined that it had appropriate controls for evaluating and adding suppliers to the Approved Suppliers List (ASL). Petersen assigns a Supplier Approval Grade; N1 corresponds to NRC Regulatory Guide 7.10 Cat A (QL1), N2 applies to commercial grade suppliers and N3 to Cat B&C (QL 2 or 3) suppliers. The team verified that the three procured components that underwent CGD were from approved N2 suppliers on the ASL and that the fourth component, procured as QL1/Cat A was from an N1 supplier also listed on the ASL.

The team reviewed three Petersen audit reports for N1 and N2 suppliers. N1 suppliers require direct evaluation and survey of the supplier's facility by Petersen auditors to examine the supplier's quality program and determine its adequacy. N2 suppliers also require direct evaluation and survey of the supplier's facility but a more limited scope commercial grade survey is the method used to qualify them since these companies supply commercial grade items. The team determined that the audit reports reviewed were comprehensive and thorough. An audit of an N1 supplier identified 8 findings and 1 observation and Petersen issued a corrective action to the supplier to document the findings and require a written response within 14 days. The supplier's response and corrective actions were verified to be contained in the audit file.

The team reviewed procedure PI-SOP-02-03, "Qualification of Lead Auditors and Auditors," Revision 5, dated 12/05/12. The procedure provides requirements for initial qualification of lead auditors and auditors and also states proficiency and annual assessment requirements. The records for three lead auditors were reviewed and determined to be in accordance with the procedure requirements.

Overall, the team determined that procurement and CGD of QL1/Cat A components by Petersen was satisfactory and no significant concerns were identified.

Fabrication and Assembly

The team examined license and fabrication drawings, work control procedures, and shop travelers to determine that fabrication of the 3-60B package met the requirements of the CoC. In addition, the team observed fabrication activities including welding and reviewed applicable personnel qualification and certification records to determine that fabrication satisfied requirements and was accomplished by qualified personnel. The team noted that in all cases fabrication drawings, shop travelers and welding procedures were adequately identified at various work locations and the documents reflected the correct revisions, as applicable.

The team reviewed the license drawing for the impact limiter and the fabrication drawing for the impact limiter shell assembly designated DWG-CSK-12CV01-ME-003, "3-60B Shipping Cask Impact Limiter Shell Assembly," Revision 3, and determined the fabrication drawing was consistent with the license drawing. The team then determined through field observations that impact limiter end plate spacing wires were fabricated as required. The team noted during a field observation of the impact limiter outer shell that the wall thickness of the shell appeared to be thinner than expected towards a small area at the top of the weld interface that completed the shell. The shell sheet metal was required to be 11 gauge material. This observation was discussed with ES and Petersen personnel and it was determined that the thickness of the shell in that area was less than the required thickness of 11 gauge sheet metal, taking into account the allowable tolerances. Therefore, Petersen wrote NCR No. 10323, dated 12/4/2014 to document the issue for resolution. It is important to note that this observation was identified by the team before the outer shell had received the required dimensional inspection by Petersen personnel.

The team observed welding of an impact limiter outer shell to corner piece and verified it was being performed in accordance with the required welding procedure specification (WPS) and weld filler material. The team noted that WPS 081 was used for the outer shell welding activity and reviewed it and the associated weld procedure qualification reports (PQRs), which include PQR 509, 486, and 011. The team determined that the PQRs were appropriate to qualify WPS 081 and Petersen obtained ES approval as required before welding was performed to WPS 081 for impact limiter work. The team also reviewed the qualifications and certifications of the welder observed in the field and determined they met the requirements of procedure PI-SOP-02-07, "Welder and Welding Operator Qualification Procedure," Revision 3, and the welder was current for the welding process being used as documented in the welder continuity log.

The team reviewed procedure PI-SOP-09-13, "Welding Filler Material Control Procedure," Revision 7, to verify weld filler materials were being stored at Petersen as required. The team determined that Petersen stored all weld filler as required and specifically, in a designated storage area that was monitored for temperature and kept within the required weld filler material temperature range. The team also noted that once weld filler material was taken to various work locations, each of the other buildings were temperature controlled such that the weld filler material would be within the required temperature range outside the designated storage area.

Overall, the team determined that fabrication activities along with the associated controls and processes were satisfactory and no significant concerns were identified.

Test and Inspection

The team observed test and inspection activities including visual and liquid dye penetrant inspections on the two welds that joined the impact limiter outer shell to the end plate. The

team verified that the inspector performed both the visual and liquid dye penetrant inspections in accordance with procedure PI-SOP-09-03, "Visual Liquid Penetrant Examination of Ferrous and Non-Ferrous Materials," Revision 11 as required, and was knowledgeable of the processes and requirements for each inspection technique.

The team noted that the inspector identified a number of non-relevant indications during the dye penetrant inspection. Once the inspection report was completed, the team reviewed it for procedural compliance and to verify all required indications were documented. No issues of significance were identified.

The team also reviewed the qualifications and certifications for two inspectors that perform visual and liquid dye penetrant inspections for work associated with fabrication of the 3-60B package. The team determined that they were qualified in accordance with procedure PI-SOP-09-01, "NDT Personnel Qualification and Certification Procedure," Revision 15, and to ASNT-TC-1A.

Overall, the team determined for the test and inspection activities observed that they were adequately performed by knowledgeable and qualified inspectors and no significant concerns were identified.

Tools and Equipment

PI-SOP-12-01, "General Calibration Procedure," Revision 10 was used to direct and coordinate calibration of measurement and test equipment (M&TE) onsite at the Petersen facility. Approved procurement procedures were used to control calibration of M&TE at offsite facilities. PI-SOP-12-01 requires all onsite calibrations to be done in the calibration lab with the climate controlled within a certain band. A check of the temperature display in the calibration lab showed the temperature was within the prescribed restraints of the procedure. Tools that were out of calibration and not to be used were marked as such and segregated into a specific area in the tool storage area.

Based on shop observations, the team verified that measuring and testing devices used in activities affecting quality were appropriately controlled and calibrated. Specifically, the team reviewed the calibration documentation for a temperature probe, serial number EM102, used during shop observations for liquid dye penetrant inspections. The team found that the probe was adequately controlled and calibrated for use in quality related work and the associated documentation was complete and readily retrievable. In addition, the team noted affixed tags showing calibration date, next calibration due date and equipment serial number on all M&TE observed in the shop. The team determined that M&TE was being adequately controlled and calibrated to ensure only calibrated equipment would be issued for use in the field.